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A LETTER

TO A

MEMBER OF THE SENATE

OF THE

UNIVERSITY OF CAMBRIDGE,

BY THE AUTHOR OF

"DISCOURSES TO ACADEMIC YOUTH."

BIBLIOTHECA BODLEIANA

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A

LETTER, &c.

DEAR SIR,

IN your last letter, You take notice, seemingly not with entire approbation, of an article in the *Postscript* to my *Discourses to Academic Youth*, in which I recommend it to be considered, whether a reduction of the time now allotted by Students of the University of Cambridge, in the course of their preparation for a Bachelor of Arts degree, to the subjects of *Mathematics and Natural Philosophy*, might not be a beneficial measure. You will readily believe, that, on a point of such importance, I did not propose an

alteration, without having maturely considered the consequences, of which it would probably be productive. As you have expressed an inclination to enter into the merits of the question, and are a Member of the Senate, I do not know to whom I can with more propriety, or with more prospect of effect, address a further developement of my sentiments respecting it. I very readily, therefore, embrace the opportunity of stating more particularly the design I have in view; of pointing out the advantages, which, as I conceive, would result from it; and of endeavouring to remove the objections, which are likely to be alledged against it.

In proposing this alteration, it is not my intention to lessen the opinion, which is now entertained in the University, respecting the importance of the

the Mathematical sciences. I freely confess, that I think the education, of which they do not make a part, extremely defective. I most readily accede to the opinion, that "the Mathematics, for the improvement of the mind, in accustoming it to *attention*, in giving it the habit of just *reasoning*, and in freeing it from *prejudices*; not to mention their subserviency to other branches of knowledge, and their usefulness to various purposes of life, can scarcely be too highly esteemed." I do not even wish, that, generally speaking, less proficiency should be made in them, than is made at present; but rather, that the general proficiency in them should be increased. I am of opinion, however, that there is the possibility of an arrangement, by which the generality of the Students may acquire as much Mathematical knowledge as they do at pre-

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sent, and a considerable portion of useful knowledge besides, to the acquisition of which they have not, at present, sufficient inducement.

It is well known, that a residence of three years and a quarter constitutes the Academical life of by far the greater part of the Students, who are sent to the University. Now, admitting the usefulness of Mathematics in the highest degree, it seems to me, that a portion of that life should be employed in a serious attention to those studies, which have a still more immediate relation to the profession, which it is the design of each Student to pursue. I do not mean, that, according to the present practice, there is not *opportunity* for such attention; but I think it adviseable, that it should be invited by those encouragements, which are found so necessary to stimulate the diligence

diligence of Youth, particularly that of having the effect of their diligence made known.

My plan, then, is, that the Students, previously to their being admitted to a Bachelor of Arts degree, should be obliged to undergo *two* public examinations; one confined entirely to Mathematical subjects; the other to subjects, which more immediately relate to their future profession. Most of those, who go out in Arts, are, I believe, intended for the Church. The subjects, therefore, which I propose for the second examination, preparatory to the study of Divinity, are the elementary parts of *Metaphysics*, *Morality*, and *Natural Religion*. It is true, that these subjects already form a part of the examination for a Bachelor's degree. It almost necessarily happens, when the mind is employed

about two things at the same time, that one of them at least fails of obtaining its due share of attention; and it is a fact, which applies equally to the *examiners* and the *examined*, that, in the examination, and in the course of previous preparation for it, these subjects have not a place proportionate to their comparative importance. With respect to the examination, were it even true, that equitable attention is paid to the several subjects nominally proposed, so as to give rank to the candidates for Academical honours according to their proficiency in each, there would still be something wanting to make it operate as a sufficient encouragement to the study of each. Honours are distributed, not according to proficiency in Mathematics and proficiency in other things separately, but according to *general* proficiency; and it is *understood*, whether justly

justly or not, that he, who has little or no pretension to Mathematical merit, has no chance of obtaining credit for any thing else. Thus it comes to pass, that such Students as, for whatever cause, do not bring themselves to apply to Mathematical pursuits, are left without that inducement to exertion, which might excite them to very laudable attainments of some other sort.

I propose, that the Mathematical examination should take place, when the Students have completed a residence of two years; not meaning, however, to consider it as very material, whether it takes place at the *beginning* or at the *end* of the October term. In the latter case, the residence will have been seven terms. In the course of the last three of these terms, the Students should perform exercises in the public schools, just as they

do at present during their last year; with the exception, however, that the *Questions* should be confined to the subjects, on which they are to be subsequently examined, to the exclusion of Moral and Metaphysical ones. To this examination and these exercises *all* the Students should be subjected, whatever profession they may intend to pursue; for I cannot but think, that Mathematics are at least as useful to the Civilian, Lawyer, Physician, &c. as they are to the Divine. From the exercise and examination, considered jointly, an estimate of the comparative merit of the Students should be made, and their several ranks assigned them, according to the present practice. The late additional regulation of extending the classing to all the persons examined, with the exception of eight or ten, who are placed alphabetically, should, I think, be adhered to; but so adhered to,

to, as to interfere as little as possible with the effect intended to be produced by the classing, which is more properly called the distribution of *honours*. The reason, for which the exception was admitted, induces me to wish for its being retained; namely, that no *one* among many, who are nearly equal, should suffer the marked disgrace of being the last.

The Students, having got through their Mathematical ordeal, will, of course, look forward to that, which they are to undergo immediately before their degree, and which, according to my proposal, will be confined to the subjects of *Metaphysics*, *Morality*, and *Natural Religion*. The diligent application of a year, or a year and a quarter, to these studies, especially at the maturity of age, which the Students will have then attained, will enable them to make a very respectable

able proficiency. To point out the particular books, in the reading of which their preparation for the examination should consist, and in which I should wish them to be examined, is going further than I intended; but, with respect to *this* examination, I will say something on that head, lest the mention of subjects, so extensive in their nature, should seem to impose a task, to which the allowed time of performance is altogether inadequate. In the case of Students under a course of education, all that can be reasonably aimed at, respecting these subjects, is, that they should be made acquainted with the first principles of each, and so far set forward in the right way, as to be in no danger of going wrong, when left to themselves. With respect to *Metaphysics*, Mr. Locke's *Essay concerning human understanding* is excellently adapted to this

this purpose. For, though it is not to be said, that every thing in that work is true; yet the leading and pervading principles of it are so; and they are made out in such a way, as to teach the mind the right use of its powers, and accustom it to think with that freedom, which is necessary to the discovery of truth. With respect to *Morality*, I have to regret, that I am not able to mention a book, which comes up to my idea of a proper elementary one on the subject. Dr. Paley's *Principles of Moral and Political Philosophy* are, indeed, very useful in some points of view; but, not to say, that I think the *theory* erroneous, the several duties are explained in a manner rather *popular* than *scientifical*. On this subject there are two unpublished works, of which the University has already had some opportunity of forming an opinion; I mean, the Lectures

tures of the late Dr. Balguy, delivered at St. John's College, and those of Dr. Hey, the late Norrisian Professor, delivered at Sidney. By either of these, should either of them be published, the deficiency, which I am lamenting, will probably be supplied. On the subjects of *Natural Religion* we have already two excellent works, Dr. Samuel Clarke's *Demonstration of the Being and Attributes of God*, and the first part of Bishop Butler's *Analogy;* the one giving the direct and regular proofs, the other obviating objections. Should the work of Dr. Balguy, of which we have a specimen, under the title of *Divine Benevolence asserted*, ever be published, we shall, I doubt not, have such additional assistance in this branch of study, as would demand our attention and thanks.

As

As I would have every Student, previously to his first public examination, perform at least one exercise in the schools on the subjects of *Mathematics* and *Natural Philosophy*; so would I have him, previously to his second, perform at least one exercise, and that an *Act*, in *Metaphysics*, *Morality*, and *Natural Religion*. With respect to the mode of conducting the two sorts of exercises, there should, I think, be some difference. The Mathematical disputations do not, in my opinion, admit of any improvement. I do not think it possible to conceive any thing, which is better calculated to afford the disputants an opportunity of exercising their ingenuity, or giving evidence of their improvement. The Moral dissertation, with which they are introduced, I would, of course, wish to be dispensed with, as not forming an appropriate part of the exercise. With respect

respect to the disputations on subjects of Metaphysics, Morality, and Natural Religion, I am of opinion, that, in each exercise, three Questions should be proposed, one on each subject; that the disputation itself should be carried on in the *English* language, instead of the Latin; and that it should be introduced by an English dissertation on one of the proposed Questions. Thus, while the Student is left at liberty to give his more peculiar attention to that branch of these studies, to which his inclination may most lead him, some portion of his attention will be secured to them all. I could further wish, that, in these disputations, the Syllogistic form of argument were entirely dismissed. As this wish may appear somewhat singular, I beg leave to state the grounds of it more at length. In the discussion of Questions, of which the truth admits of

Mathematical

Mathematical demonstration, the arguments brought against them are of such a nature, that, by competent skill and knowledge, they may be completely answered. They consist, for the most part, of an artful departure from the meaning of the Question itself; a misapplication, inconsistent with the Question, of the general truths, on which it depends; or some other fallacy of a similar sort; and, when this is detected, the argument is (to use the Academic phrase) *taken off*. The case is much the same in disputations on Questions of *Divinity* and *Civil Law:* for though, in these, the truths referred to are not of a strict *demonstrative* kind, they have the same effect in the disputation; it not being allowable, in the one, to controvert the authority of the *Scriptures*, nor, in the other, that of the *Justinian code*, *&c.* In Moral and Metaphysical subjects,

jects, and more especially the former, the case is very different. Here, the truth of the Question itself rests on the preponderance of probable arguments; and it often happens, that one of the arguments, by which it is supported, may be opposed by another, of equal, or nearly equal force, which militates against it. Though the whole train of reasoning, by which the truth of a Moral Question is made out, be convincing and satisfactory; yet it may not be possible, in the nature of things, to show, that a particular argument against it has *no* weight; or to shew, in the few words, to which an answer to a Syllogism is necessarily confined, that it has not a weight affecting the credibility of the Question itself. Thus, the Respondent is often reduced to the disagreeable dilemma, of either denying an evident truth, or giving up his Question; and the consequence is, that,

that, without any want of knowledge or skill in the Moderator or the Disputants, the discussion gives the audience an idea, either that Moral subjects, considered as matters of science, are of so trivial a nature, as to be undeserving of any serious attention, or of so uncertain a nature, as to render any attention to them fruitless. The truth of this will, I doubt not, be evident to those, who have much frequented the schools, and who have observed the manner in which this part of the exercises is conducted. The method, then, which I propose, is, that, after the Respondent has read his dissertation, the Opponent should offer his objections to the Questions one by one, drawn up in a free, but in as concise and forcible a manner as possible; and that he should defend each of them *vivâ voce* against the replies of the Respondent until

the Moderator shall judge it proper to put an end to the discussion.

Such, my dear friend, is my proposed plan. The advantages of it will, I hope, have appeared in the course of its developement. I will add, however, more particularly, that, besides the advantage (the principal one I had in view) of securing a more serious attention to the subjects of Metaphysics, Morality, and Natural Religion, there would, I think, result, from the adoption of my plan, the additional advantage of strengthening the incitement to industry and application throughout the whole period of Academic life. The first arrival of a young man in the University is an important event to him; and the circumstances, with which it is attended, will have a powerful effect on his future conduct.

duct. If the measures are then adopted, by which a habit of voluntary application is induced, it will probably remain; if they are not, it will probably never be acquired. It must be expected to happen in general, though there are instances to the contrary, that, if a young man spends the early part of his residence at the University in idleness, the remainder will be spent in vice. In this point of view, it is a matter of great importance, that the incitements to application should be so contrived, as to have an *immediate* and an *unremitting* effect. When a Student first enters the University, the examination he is to undergo for his first degree, however formidable it may be when near, is looked forward to, at the remote distance of three years and a quarter, without any great apprehension: whereas, if he knows, that, at the end of two years, he

must give full evidence of his proficiency, and that he is liable, at the end of one year, to be called upon for *some* proofs of it, he will have much less temptation to imagine, that he has any time to spare. It is true, that, in order to supply this deficiency of early incitement, annual examinations have, for many years, and with no inconsiderable effect, been instituted in some of the particular Colleges. The advantages, however, which have been experienced from these, far from superseding the necessity of the plan I am proposing, furnish, I think, a strong argument for adopting it. For, not to mention, that these examinations are not *general*, they are not, especially in the smaller Colleges, sufficiently public to excite all the emulation desirable; nor can they, in *any*, answer all the purposes, which would

would be answered by an University examination.

Another advantage of my plan is, that it would bring an obligation on *all* the Students to pay *some* attention to Mathematics, and tend to correct the unfounded notion, so well calculated to countenance inattention and idleness, that some minds are incapable of acquiring Mathematical knowledge. I call this an unfounded notion, because I cannot bring myself to think, that, to the acquisition of the lower branches of Mathematical knowledge, any thing more is necessary than a common understanding and moderate application; and to persons, who cannot command both these, I can only say, that their parents and friends are injudicious, to use no harsher term, in directing them to any literary pursuit at all. But what I have principally in

 view,

view, under this head, goes rather further than this. It is well known, that many young men, finding or fancying, that they have no *turn* for Mathematics, and yet wishing to avoid the disgrace of a public exposition of their ignorance, alarmed at the near approach of the Bachelor's examination, file off from the field of danger in good time, by declaring an intention to proceed in Civil Law; and thus, with the exception of a single Act, which is to be kept in the course of six years nominal probation, as a qualification for their degree in that faculty, they escape all obligation of giving public testimony of their proficiency. That there are instances, in which this licence is made the shelter of indolent security, will not, I think, be disputed; and it is no small recommendation of my plan, that, by subjecting *all* the Students to the first public examination,

examination, it will remove the temptation to its being so abused in future. After the first examination is over, I would leave the Students at liberty to declare for a further proficiency in Arts, by which they would be subjected to the second public examination; or for confining their attention to the profession of Law or Physic, by which, of course they would be exempted from it, and referred to the care of the proper Professor.

I will here add my wish, conceived in a regard for the welfare of those, to whom it more immediately relates, that the society of King's College, the Students of which are, at present, exempt from the obligation of giving *any* public testimony of their proficiency, as a qualification for their degree, and consequently deprived of that incitement to exertion,

exertion, which is found so useful, would voluntarily resign a privilege, if they have the power of resigning it, from which so little honour or advantage is to be derived, and submit to be regulated by the general law. It must, indeed, be acknowledged, that many individuals of that society have very highly distinguished themselves in literary pursuits; but it will, I think, be found, on inquiry, that this has happened much more in pursuits, to which they have incitements in common with other members of the University, than in those, to which they have not such incitements.

I am not aware, that any thing can be alledged, by way of *objection* to what I have proposed, but the apprehension, that the application of two years to the study of Mathematics is not sufficient to enable Students to make a competent proficiency

proficiency in them. In reply to this, I will first observe, what will probably have already appeared, that two years would at least be equal to the time, which is now applied to that purpose by the generality of Students; and it seems evident, that every arrangement of this sort ought to have the benefit of the generality chiefly in view. Indeed, I consider the institution of external inducements to exertion as being only *generally* useful. In proportion as the love of science has place in the mind, the necessity of other inducements to its pursuit is superseded. It cannot be supposed, that the ardour of a NEWTON or a WARING, not to mention the names of living ornaments of the University, stood in any need of them; that those, who were prepared, by the superiority of their genius, to become prodigies of *human intellect*, could be much affected by the hope

hope of being placed at the head of a hundred juvenile competitors. With respect, then, to the generality of Students, I cannot but think, that the serious application of two years would enable them to attain as much knowledge of Mathematics and Natural Philosophy, as would fully answer the great purposes, which the study of these sciences is intended to answer, and as much as they are now found to have attained at the time of taking their degree. This will still more evidently appear, if we take into consideration, what experience has shown to be true, that the rudiments of Mathematics, the true των παιδων μαθηματα, may be comprehended at a very early age; and that a considerable proficiency in Arithmetic, Algebra, and Geometry (something less, I believe, than Plato required as a qualification for admission into *his* Academy) may easily

easily be made at school, without any hindrance to what is the more peculiar business there. Those who, from their talents, and their inclination for Mathematics, are likely to make extraordinary proficiency in them, and to extend their bounds, will hardly be stopped in their career by the circumstance of having passed through their public examination; and, if it should be admitted, that to such any external inducement is necessary, there would still remain, in the distribution of the *Prizes*, at the time of taking their degree, those inducements, to which, of course, as the most important marks of distinction, the best Mathematicians, who think at all about competition, always look forward.

Thus, dear Sir, have I given you my full thoughts. I was willing, before you finally decided on the propriety and expediency

expediency of the hint, which is so briefly expressed in my *Postscript*, that the subject should be presented to you, with all its bearings and dependencies, just as it stands in my own mind; and that you should not think me quite so paradoxical as, at first view, I may appear, in wishing for an increase of Mathematical knowledge in the generality of the Students, and for a diminution of the time, which is allowed to its acquisition.

I remain,

Dear Sir,

with the sincerest wishes for the

welfare of our Alma Mater,

Yours truly,

Edw Pearson B.D
fell & tutor of
Sidney & pres.
by gt coll to Rearston
R. C. Nott. 1796

REMPSTONE PARSONAGE,
FEB. 1, 1799.